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APPLICATION NO	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO	CONFIRMATION NO
09/145,595	09/02/1998	JI UNG LEE	303.537US1	6122

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EXAMINER	
GUHARAY, KARABI	

ART UNIT	PAPER NUMBER
2879	

DATE MAILED: 12/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/145,595	LEE, JI UNG	
	Examiner	Art Unit	
	Karabi Guharay	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 September 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *36-60* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *36-60* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a)☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *19*.
4)☐ Interview Summary (PTO-413) Paper No(s). _____.
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other: .

Appeal brief (Paper # 23), filed on September 9, 2002 has been entered and considered.

Final rejection, filed on March 26, 2002 has been withdrawn and the prosecution for the case has been reopened.

Response, filed on June 11, 2002, has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 47-60 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In each of the independent claims 47, 51, 53, and 57, applicant claims a row of cathode lines on a substrate, then claims "a gate line to cathode distance between a portion of the gate line and the cathode is substantially thinner than the gate line thickness". Gate line thickness is the thickness of the gate insulator on which gate line is formed. In this case, gate line to cathode distance is same as gate line region thickness at any region of the display, since there is no emitter cone having tip is claimed. Thus it is unclear what is meant by gate line to cathode distance between a portion of the gate line to cathode (is it emitter tip of the emitter cone, which is not claimed here?) is substantially thinner than gate line region thickness.

Is it gate line to emitter tip distance, which is thinner? But there is no emitter claimed. Thus scope of the claims cannot be determined. Appropriate corrections are required.

For examination purpose, it is understood as the emitter tip to gate line distance.

Claim Rejections - 35 USC § 102

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 36-38, 40-41, 43-44, 46-49, 52-54, 56-58, and 60 are rejected under 35 U.S.C. 102(e) as being anticipated by Greschner et al. (US 5817201).

Regarding claim 36, Greschner et al. disclose a field emission device (Fig 2 & Fig 3A) comprising a number of cathodes 3, a number of cathode emitter tip (9, see Fig 2, and also see Fig 3A) formed in rows along a substrate (4), a gate insulator (6) formed along the substrate and surrounding the cathodes (see Fig 2), a number of gate lines (5 or 18) formed on the gate insulator (6), an anode (11) being formed orthogonal and opposing the cathodes (lines 66 of column 5- lines 54 of column 6).

Though Greschner does not explicitly disclose anode in form of strips (plurality of anodes however, it is inherent, since Greschner discloses matrix addressed field

emission devices for a flat panel display (lines 14-18, and 39-55 of column 1, and also line 46 of column 6, and see Fig 3A).

Greschner et al. further disclose that a distance separating the number of cathode emitter tips from the number of gate lines (about 0.5 micron, lines 61-62 of column 6) is significantly thinner than a separation distance separating the number of gate lines and the substrate, which is few tens to few microns (see lines 55-57 of column 6, Fig 2B).

Method limitations in claim 36 and claim 37 have not been given patentable weight since the method of forming the device is not germane to the issue of patentability of the device itself (see MPEP 2113).

Regarding claim 38, Greschner et al. disclose that the number of cathodes (9) include polysilicon cones (see column 6, lines 5-6).

Regarding claim 40, Greschner et al. disclose that the substrate (4) includes glass (column 6, line 15).

Regarding claim 41, Greschner et al. disclose that the number of gate lines (18) include refractory metals (column 8, lines 35-44).

Claim 43 recites essentially all the limitations of claim 36 (see rejection of claim 36) together with a row decoder and column decoder to selectively access the pixels and a processor. Though Greschner does not exemplify these elements but these are intrinsic to any flat panel display system for displaying images.

Claim 44 is rejected for the same reason as claim 37.

Claim 46 is rejected for the same reason as claim 41.

Regarding claim 47, see rejection of claim 36.

Claim 48 recites essentially the same limitation of claim 38. Thus claim 48 is rejected as claim 38 (see rejection of claim 38).

Claim 49 recites essentially the same limitation of claim 41. Thus claim 49 is rejected as claim 41 (see rejection of claim 41).

For claim 52, Greschner et al. disclose a number of cathodes (43 of Fig 4F) on semiconductor on glass (substrate 31, made of glass and semiconductor layer 33 and 38, lines 1-62 of column 7). For other limitations see rejection of claim 36.

Regarding claims 53 & 57, Gerschner et al. discloses a flat panel display comprising a field emitter array including essentially all the limitations of claim 47 (see rejection of claim 47) together with limitations of a row decoder and a column decoder to selectively access the pixels and a processor. Though Greschner does not exemplify these elements but these are intrinsic to any flat panel display system for displaying images.

Claims 54 and 58 recite essentially the same limitation of claim 37. Thus claim 54 is rejected as claim 37 (see rejection of claim 37).

Claims 56, and 60 recite essentially the same limitations of claim 41. Thus claim 56 is rejected as claim 41 (see rejection of claim 41).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 39, 42, 45, 50-51, 55 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greschner et al. as applied to claim 36.

Regarding claim 39, Greschner et al. disclose that the cathodes (9) include low work function material (line11-12 of column 6), however, does not specifically used metal silicides. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use metal silicides as low work function material, in the tip of Greschner, since it has been held to be within the general skill of an worker in the art to select a known material on the basis of its suitability for the intended use.

Regarding claims 42, and 50, though Greschner et al. does not disclose that the number of gate lines (18) include doped silicon, however, it is well known in the field of Field emission devices, to use metals or doped silicon or silicided polysilicon as the gate line material, and also noted that applicant's specific gate line material of doped silicon does not solve any of the stated problems or yield any unexpected result that is not within the scope of the teachings applied. Therefore it is considered to be a matter of choice, which a person of ordinary skill in the art would have found obvious to select one of the known suitable materials such as metals or doped silicon.

Claims 45, 51, 55 and 59 are rejected for the same reason as claim 39.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karabi Guharay whose telephone number is (703) 305-1971. The examiner can normally be reached on Monday-Friday 7:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (703) 305-4794. The fax phone numbers for the organization is (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

K.G
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